Scientific Inquiry

4-1 The student will demonstrate an understanding of scientific inquiry, including the processes, skills, and mathematical thinking necessary to conduct a simple scientific investigation.

4-1.5 Recognize the correct placement of variables on a line graph.
Taxonomy Level: 1.1-A Remember Factual Knowledge

Previous/Future knowledge: In 2nd grade (2-1.3), students represented and communicated simple data and explanations through drawings, tables, pictographs, and bar graphs. This is the first time that students have been introduced to variables in relation to graphs. In 5th grade, students will identify independent (manipulated), dependent (responding), and controlled variables in an experiment (5-1.2) and will construct a line graph from recorded data with correct placement of independent (manipulated) and dependent (responding) variables (5-1.5). In 7th grade (7-1.5), students will explain the relationship between independent and dependent variables in controlled a scientific investigation through the use of appropriate graphs, tables, and charts.

It is essential for students to know that line graphs show the relationship between variables in an investigation.

- A *manipulated variable* is the factor that is changed in an investigation.
  - The manipulated variable is always located on the x-axis.
- A *responding variable* is the result or response to the manipulated variable.
  - The responding variable is always located on the y-axis.

NOTE TO TEACHER: Students will construct line graphs in 4-1.6.

It is not essential for students to identify variables as independent or dependent.

Assessment Guidelines:
The objective of this indicator is to *recognize* the correct placement of variables on a line graph; therefore, the primary focus of assessment should be to identify the location of the manipulated and the responding variables on the axes of a line graph.